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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,796	03/06/2002	Yuan-Liang Li	219.40775X00	6702

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EXAMINER

MCCAMEY, ANN M

ART UNIT	PAPER NUMBER
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2833

DATE MAILED: 06/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/090,796

Applicant(s)

LI, YUAN-LIANG

Examiner

Ann M McCamey

Art Unit

2833

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

Figures 1 and 2 should be designated by a legend such as --Prior Art-- or --Related Art--; or removed from the application because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making.

Claim Objections

Claims 39-42 are objected to because of the following informalities: "as least" should be --at least--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-38 are rejected under 35 U.S.C. 102(e) as being anticipated by
Figueroa et al. (US 6,388,207).

Regarding claims 1 and 9, Figueroa et al. disclose a shunt/mechanical connector 60 (Fig. 6) disposable to directly contact two discrete electrical components 50, 152 mountable together via a grid array, the connector to provide mechanical support and to provide a shunt electrical conduction path for predetermined electrical current between the electrical components such that the electrical current does not pass through grid array connectors of the grid-array (column 8, lines 30-35).

Regarding claims 2 and 10, Figueroa et al. disclose the shunt electrical conduction path has a cross-sectional area greater than that of any one of the grid array connectors, so as to provide a lower resistance shunt path for current than the grid array connectors.

Regarding claims 3 and 11, Figueroa et al. disclose the shunt/mechanical connector has at least one contact to electrically contact at least one of a pad, a via,

and predefined PCB conductive patterns electrically connected to a power or ground plane of at least one of the electrical components.

Regarding claims 4 and 12, Figueroa et al. disclose the shunt /mechanical connector is providable in a location in at least one of: a predetermined reserved component area of the grid array arrangements; within a grid array connector area having the plurality of grid array connectors; outside of the grid array connector area, but through any socket assembly providing the plurality of grid array connectors; and, outside of any socket assembly.

Regarding claims 5 and 13, Figueroa et al. disclose the shunt/mechanical connector is substantially made of at least one of rigid electrically conductive sections formed as one of a molded, stamped, etched, extruded and deposited arrangement, and is capable of withstanding temperatures of at least a normal electrical component operation of the electrical components.

Regarding claims 6 and 14, Figueroa et al. disclose the shunt/mechanical connector being one of provided separately from, and integrated with one of, the electrical components.

Regarding claims 7 and 15, Figueroa et al. disclose one of the electrical components is one of: a motherboard, a printed circuit board (PCB); and a receiving substrate, and another of the electrical components is one of: a semiconductor package; a semiconductor package having an interposer-, and an interfacing substrate.

Regarding claims 8 and 16, Figueroa et al. disclose a grid array mount being one of: a bump/ball grid array; a micro BGA; a pin grid array; and a micro pin grid array.

Regarding claims 17 and 28, Figueroa et al. disclose shunt/support device comprising a shunt/support member 60 disposable to directly contact two discrete electrical components 50, 152 mountable together with opposing grid array arrangements having a plurality of grid array connectors, the shunt/support member engageable with the electrical components to at least one of mechanically support and secure the electrical components with respect to each other, and also to provide at least one electrical conduction path electrically connectable so as to shunt more than a majority portion of at least one predetermined type of current flowable between the electrical components, from flowing through ones of the plurality of grid array connectors (column 8, lines 30-35).

Regarding claims 18 and 29, Figueroa et al. disclose the shunt/support member being at least one shunt/support post disposable between the electrical components.

Regarding claims 19 and 30, Figueroa et al. disclose the shunt/support member disposable to shunt substantially all of the at least one predetermined type of current.

Regarding claims 20 and 31, Figueroa et al. disclose the shunt/support member being capable to shunt the more than a majority portion of the at least one predetermined type of current, by the at least one electrical conduction path having a lower electrical resistance for current flowable between the electrical components through the shunt/support device, in comparison to an electrical resistance through the ones of the plurality of grid array connectors.

Regarding claims 21 and 32, Figueroa et al. disclose the at least one electrical conduction path having the lower electrical resistance by at least one of- having a

current-carrying cross-sectional area measured perpendicularly across an electrical current flow direction therethrough which is greater than a corresponding cross-sectional area of the ones of the plurality of grid array connectors; and being constructed of material which is lower in electrical resistance than an electrical resistance of a material of the ones of the plurality of grid array connectors.

Regarding claims 22 and 33, Figueroa et al. disclose the at least one predetermined type of current being one of a power supply current, a grounding current, and a high-voltage current.

Regarding claims 23 and 34, Figueroa et al. disclose the shunt/support member being securable with the electrical components using at least one of solder, welding, at least one fastener, and glue, so as to mechanically secure the electrical components with respect to each other.

Regarding claims 24 and 35, Figueroa et al. disclose being disposable in a location in at least one of: a predetermined reserved component area of the grid array arrangements; within a grid array connector area having the plurality of grid array connectors; outside of the grid array connector area, but through any socket assembly providing the plurality of grid array connectors; and, outside of any socket assembly.

Regarding claims 25 and 36, Figueroa et al. disclose where one of the electrical components is one of: a motherboard, a printed circuit board (PCB); and a receiving substrate, and another of the electrical components is one of: a semiconductor package; a semiconductor package having an interposer; and an interfacing substrate.

Regarding claims 26 and 37, Figueroa et al. disclose the grid array arrangements being one of: a bump/ball grid array; a micro BGA; a pin grid array; and a micro pin grid array.

Regarding claims 27 and 38, Figueroa et al. disclose the shunt/support member comprises aligner components to substantially align the opposing conductive grid-array patterns of the electrical components during mounting together thereof.

Regarding claims 39-42, Figueroa et al. disclose the connector being disposable at least partially sandwiched between the electrical components.

Response to Arguments

Applicant's arguments filed 4/4/03 have been fully considered but they are not persuasive. Applicant argues that the Figueora et al. reference does not teach the claimed elements. However, the claims are generally broad and are, even as amended, anticipated by the reference. Applicant argues that the Figueora et al.'s trenches differ from the shunt/mechanical connector claimed because (1) it does not directly contact the two discrete electrical components and (2) does not mechanically support the electrical component because a trench is an absence of material. Due to the broad nature of the pending claims, the entire substrate 60 of Figueora et al. can be characterized as the connector. The substrate 60 (1) directly contacts the two discrete electrical components 50, 152 via lands 74 (labeled in Fig. 4) and solder balls 80; and (2) provides mechanical support to the electrical component 50. See Fig. 6. Thus the

Application/Control Number: 10/090,796
Art Unit: 2833

limitations of the claims are sufficiently met by the applied reference and the rejection has been maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann M McCamey whose telephone number is (703) 305-3422. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on (703) 308-2319. The fax phone numbers for the organization where this application or proceeding is assigned are (703)


Application/Control Number: 10/090,796

Art Unit: 2833

872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

AMM
June 4, 2003



RENEE LUEBKE
PRIMARY EXAMINER